

# AVIATION WEEK

OCT. 24, 1949

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FOR THE AVIATION INDUSTRY

## THE AVIATION WEEK

### The Budget Victory—A Staff Report

WASHINGTON—After power was a sharp victory again as Capitol Hill last week with the Senate unanimously to reinstate House passage for funds to implement a 15 group Air Force.

Senate approval sent the record prostrate USAF to-billion appropriation to the White House where it faces its final and perhaps most formidable hurdle.

For the aircraft industry the new USAF budget means

- **New contract authorizations at \$4,992,755,000.** This is more than \$100 million above the original budget demanded by President Truman and once supported by the Senate.

- **Procurement of 2538 new aircraft.** This is 500 planes more than 1959 authorized in the President's budget. Additional planes will be 474 fighters, 166 transports, and 231 trainers.

The new USAF budget will boost total new contract authority for fiscal 1958 in power (USAF and Navy) to close to \$2.7 billion for 1951 new planes. However, the air power budget again faces a rocky road as the executive branch of the government. Further slapping for reduction in the congressional appropriation is:

- **President Truman's military insurance on the 46-group Air Force specified in his budget message of last January.** Just last week the President told senators he was still standing firm for the 46-group program. Some senators say, "The USAF program only because they felt confident the President would refuse to allow the additional funds to be spent."

- **The economy program under way in the Defense Department.** Defense Secretary Johnson is now in the midst of cutting back fiscal 1958 military spending over \$400 million below the presidentially approved budget. This would mean dropping of about \$1,100,000,000 from the fiscal 1958 budget just approved by Congress. Air Force Secretary W. Stuart Symington avoided during hearings on Capitol Hill that Johnson's cuts were aimed mainly at reducing the armed forces during fiscal 1959 so they would be approaching the level of new reductions already being planned for the fiscal 1951 defense budget.

Clearly the Congress and the executive branch of the government do not see eye to eye on defense problems. For while the President and Johnson are looking every way to reduce, the Congress is voting substantial increases for the defense budget. Rep. Carl A. Vanden (D, Cal.), probably the most powerful legislator on the HILL when it comes to defense matters, has relieved the hearings of the House Armed Services Committee. During the past week with his reply came in at Johnson's 1950 million cut already entered in fiscal 1958 spending. This cut will cause largely at the expense of aircraft procurement for Navy and USAF.

Vanden is determined that Johnson be headed off from an economy program that makes reductions in the armed services strength rather than the present savings through increased efficiency and elimination of wasteful overhead. The increased funds for the USAF approved by both House and Senate now get added significance to the impending clash between Vanden and Johnson when the latter appears before the House Armed Services Committee. For aside from the Navy USAF deal and meddling over the B-36, the real case of state will be whether the Defense Department must spend money appropriated by Congress for the purposes for which it was appropriated.

Vanden did his best to encourage Symington into open defiance of the presidentially imposed 46-group USAF ceiling. During Symington's week a newspaper account that Sen. Philip Thomas (D, Okla.) alleged that Symington had told him the USAF did not need the planes, Vanden asked Symington bluntly where he stood as the son of the USAF. Symington denied the question to Sen. Thomas.

"I have always believed that the security of the United States depends on Air Force of 70 groups," Symington told Vanden. "The President feels there is not sufficient money to get them at this time. However he does not believe we should have 70 groups when the money is available by approving the authorization legislation for the 70-group force. I support the President in that we do not have the money for 70 groups at this time but feel we should have them in some in possible."

Symington said that because of the doubling in plane strength of B-36 bomber groups the USAF program now contemplated only 67 groups for maximum peacetime security.

The Senate debate on the USAF appropriations indicated how little of the basic elements of aviation procurement we now are understood in Capitol Hill and the magnitude of the job of educating legislators on the facts of air power that still needs to be done. For example, Sen. Selaford (R, Mass.), a supporter of the 46-group program, noted that only half of the 474 additional fighters now be possessed in fiscal 1951. He apparently didn't realize the three to five-year time lag from placing an aircraft order until delivery to military squadrons. The jets of air power and its industrial problems must be discussed on the HILL constantly if these inevitable annual budget cuts are to be avoided in the future and military air power is to finally get the funds it needs as the nation's first line of defense.

Symington opened that the Russians are three years ahead of their timetable on atomic bomb development. The figure shows that we are already two years behind our time table calling for the development of a 70 group Air Force by 1952.



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## WHO'S WHERE

### Changes

James A. Woods, formerly president of Alaska Airlines, is now chairman of the board of Nat'l East Air Transport, Inc. ... Sam Y. Smith, former general manager of the West Manufacturing Co., Ft. Erie, Ontario, airplane company, is now president of the new Fleet of America, Inc., Buffalo, N. Y. Firm is engaged in production of aluminum pistons. ... Michael E. Cole, Southwest Airways ground traffic manager, has resigned to become vice president of Bonanza Air Lines in Las Vegas, Nev.

### Appointments

Richard C. Colquhoun, for two years regional personnel manager for Eastern Air Lines at Atlanta, is now employment manager for EAL's entire system. ... F. K. Furlan is director of production and mail services for American Airlines, midnight. ... H. M. Brown, regional. ... Ronald G. Galt is manager of public relations for Cessna propeller division. ... Michael J. Phillips is general manager of the newly formed Inland Division of Cessna Aircraft, Inc. ... John K. Wendall is research assistant in charge of National Airlines research and aviation department, receiving. ... W. R. Caldwell, Jr., new manager of scheduler and traffic.

Richard T. "Dick" McConley is assistant in charge of placement relations for Hiram Nelson Corp.'s Pontiac Products Division. ... Frederick A. Martfield is factory manager of the Edgemoor plant in Elmhurst, N. Y., producing E & S Series, now with Curtiss Wright Corp. in Wood Ridge, N. Y.

### Awards, Elections, Honors

George G. Van Nostrand has been elected vice president and general manager of American Airlines de Mexico, successor of Mexico Airlines, acquired. ... S. M. Schindler was selected president of S. M. Schindler Sales & Service, Inc. ... John W. Noyes of the Noyes Corp. Organization has been elected a director of Heliquest Air Service, Inc. ... R. J. Thompson, manager of sales for General Electric Aircraft Gas Turbine Division at Lynn, Mass., has been appointed to the David C. Guggenheim Medal Board of Award.

Gordon R. McGee, president of Trans-Canada Air Lines has been elected a member of the executive committee of the International Air Transport Association. ... John L. Collier, president of D. F. Goodrich Co., has been elected a trustee of the Allied P. Sales Foundation.

### Leave and Retirement

Joseph T. Giesing, manager of Aircraft Industries Area's Personal Aircraft Council, will be on leave from his Washington office for a month or more, after a physical checkup revealed his need for a complete rest. ... George B. Fort, vice president of the Tide Corp., has retired because of illness.

## INDUSTRY OBSERVER

►Watch for two and possibly three West Coast aircraft manufacturers to announce shortly they are serving their transport transport projects of the drawing board into their experimental shops. These manufacturers will go ahead with transport prototypes regardless of what happens in the prototype legislation now before Congress. At least two of the three firms are expected to take a strong stand against government financing of experimental prototypes, on the grounds that private financing of such projects poses the problem that, trying to build planes according to the dictates of the type of aviation politician that might start a government prototype development board.

►Major airlines are now in the midst of a trend toward aluminum propeller blades, with the result that Cessna Propeller Division and Hamilton Standard are seeking a new peak in production of this type blade. Trend is a result of recent engine difficulties with hollow steel blades, but CAA's technical staff expects a swing back to steel after extensive stress work is completed on hollow steel blades. Major user of the hollow steel blade, according to CAA, is a weight-through rate that will count heavily in the long run.

►Initial steps are under way to bring international requirements on aircraft design standards in line with the broad international agreement recently reached between the U. S. and Great Britain. Generally, the aircraft industry feels the international agreement's provisions are too broad for precision aircraft work and wants a supplementary pact calling for close tolerances for special types of thrusts and in motion. A new international project to detail the specifics of this supplementary agreement is expected to emerge from the joint military-civil aeronautical standards group.

►Piper Aircraft's new experimental twin-engine all-metal five-place even-temper is a modified version of the West Coast experimental Bonanza Replicator, which Piper has purchased. Piper version will use two 200-hp engines mounted in tractor position, instead of the two 125-hp pusher engines used in the original plane. Minor changes are in wing position and powerplant installations with few fuselage modifications. The Piper Replicator, which is expected to be completed, will probably fly in December.

►Boeing Aircraft Co. closed its Moses Lake AFB flight test operations in Washington with departure of the second X-47 Stratojet bomber, fitted with GE J-47 engines, from the field. Approximately 40 Boeing employees stationed at Moses Lake were transferred to Wichita, while other experimental division employees were temporarily assigned at Wichita. The jet bomber flew from Moses Lake to Wichita atop a 14-hour flight of 2 in, 35 min, for the 1500-mi. distance, or at the rate of approximately 600 mph. Pilot was John Fossano and A. M. (Tex) Johnson.

►McDonnell Aircraft Corp. short afterburners have been fitted to the second XF-64 Voodoo jet fighter now at Wright Air Force Base, Calif. At this time, the jet is a very short takeoff extension incorporating fuel nozzles. Although its short takeoff is not yet fully over the test, Westinghouse J4M turbojet engine installation, it provides about 40 percent increase in thrust for short periods.

►Lilco Co. Marion E. Carl, former world speed record holder, drove a North American F-66A Sabre jet fighter to Mach number 1.95 recently over Wright-Patterson Air Force Base, Dayton, Ohio. Carl made the flight at the course of a contest visit to the Air Force installation. Supersonic speed was obtained in a 35-degree dive from 75,000 ft. In a normal dive, the F-66A is capable of Mach 1.775, at slightly less than 50,000 ft. Air Force has not yet fully explored the transonic speed possibilities of the Sabre due to structural dangers but the prototype XF-66 contains structural modifications aimed at providing evaluation of full aerodynamic capabilities of the design.

SEARCH OFFICES: Chicago • New York  
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DENTFIELD AND CATES—Press is confused strength of Navy, Marines and Air Force



THACH—Gears loose on power in service



BLANDY—Strategic bombing has its points

## Symington Counter-Attacks the Admirals

Secretary tells House committee of new anonymous document criticizing USAF.

Control of the military services by civilians is now the fundamental principle at issue before the House Armed Services Committee investigation of national defense. Air Force Secretary W. Stuart Symington told the group last week. Symington opened a blistering USAF counter-attack on previous testimony by Navy admirals stating the B-36, the G-6, the F-86 and other strategic bombers.

The admiral had told the committee they were wrong over branding of the Navy by Defense Secretary Louis Johnson. Johnson branding the Joint Chiefs of Staff and the civilian secretaries of the Defense Department complicit. The admiral contended that people now making Defense Department documents were not qualified to evaluate Naval problems. Symington

described himself to the committee as just a civilian trying to run the Air Force.

**New Anonymous Attack**—Symington also charged there was a "disturbing inequality" between the admiral's testimony and the contents of a new anonymous attack on USAF strategic bombing entitled "The Strategic Bombing Myth." Symington read into the record a letter from Franklin D. Oiler, head of the U. S. Strategic Bombing Survey to Louis Johnson branding the anonymous document as a deliberate fabrication aimed at discrediting the conclusions of the survey report.

Symington told the anonymous document and the admiral's testimony shared the same principal arguments, used identical quotations and in some cases made the same misstatements.

Symington also put into the record an Air Force investigation report showing that the anonymous document was sent to several hundred newspapers by James C. Shillineau of the New York Bureau. Shillineau is a Naval Reserve captain.

**Used by Retirees**—"The USAF" report also shows "The Strategic Bombing Myth" was also used for indoctrination at a Naval Reserve group at New York. The House investigation was touched off by an anonymous letter charging corruption and political inactivity in B-36 procurement. The committee identified the author of the first anonymous document as Cedric Worth, a \$38,000 a year civilian assistant to Navy Undersecretary Dan Kimball. A Navy inquiry into whether Navy officials aided Worth in preparing and circulating the charges in Capitol Hill has completely repudiated activities after establishing several Naval officers in Worth's activities.

Symington denied that he or any

ex-ante Air Force officers involved should now be Naval officers.

**Naval Spots**—"I believe some of our Air Force senior officers have been advertising a single air force ever since so many Navy airplanes have come out for Navy participation in strategic bombing," Symington told the committee. He conducted a 1947 speech by Admiral Chester Nimitz advocating Navy participation in bombing the Russian homeland as serving notice of the Navy's intention to march on USAF strategic bombing leadership.

Symington charged that more 1947 members of the Naval establishment have been conducting a carefully aimed, able and unrelenting campaign against any coalition with long range. He said the Navy had traditionally opposed extension of the range of land-based aircraft and that the principal reason for this was against the B-36 as that the Carrier battleship had international range.

**Raise Ceiling**—"To the best of our knowledge nobody has ever tried to limit or restrict the development of plane speed, altitude or weight carrying capacity," Symington asserted. "But everybody there is a wage increase in range the atom bomb."

He charged that the "bitter and unprovoked" on the B-36 or any other long range aircraft always reflect a conscious effort to bring opposition to bear to be determined.

**Replies to Charges**—Symington answered the following specific charges made by the admiral:

- The USAF is getting all its eggs into one basket.** Symington pointed out that the 70 group USAF program involved only four groups of B-36 bombers total but 150 planes plus two reconnaissance groups of which there has been no criticism. The B-36 bomber group would constitute only 5 percent of completed USAF strength.

- Investment in B-36 procurement is wasting money because of the service for defense expenditures and forcing cutbacks.** Symington pointed out that when the B-36 program was completed it cost would be less than a billion dollars. Cost of the additional B-36 procurement to which Admiral Radford and Dentfield objected amounts to 11 percent of the National Maritime Establishment budget of fiscal 1949 through '51, Symington told the committee.

- Testimony by Admiral Dentfield that a high level joint USAF Army and Navy committee appointed to study atomic bombing had concluded that atomic attacks would be ineffective.** Symington quoted a letter from Maj. Gen. H. H. Hanson, head of the joint group which stated that the group's report was in variance with the impression Dentfield sought to create. He

also denied a story by Thomas Ballantine in the N. Y. Times stating that general had allegedly been brought to Hawaii for service but was against atomic bombing. Symington pointed out that Dentfield had refused to give the committee the conclusions of the Hanson Report on the ground that he set it aside in the last war.

- Testimony by other admirals that the USAF had purchased additional B-36s through peacetime action that sought to deny the Joint Chiefs of Staff and Defense Secretary Forrestal into approval of the action.** Symington pointed out that the Air Force had gone through all of the complicated approval and certification process for peacetime procurement required in the Defense Department and that it had been January to April to send through the main of air to type. He headed off the suggestion that neither the Navy nor Forrestal knew the USAF was conducting a B-36 buy.

- Surplus.** Peacetime—Symington recommended that the present process, most procedures for surplus in the Defense Department should be simplified and that the Navy should have power to sell surplus property for ships and tanks and other equipment.

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Admiral Ralph Oiler, Dentfield said. "I am also a proponent of strategic air warfare. It is my deep conviction that the joint Chiefs of Staff, who often are misled by the Strategic Air Command in the past, was, if not should come, must be directed with far greater precision and selectivity than the land-based effort in the last war."

**Target system.** Individual targets must be carefully selected, identified and hit with accuracy if that or otherwise is to justify the expenditure of money involved.

**Navy States.** Furthermore I maintain that the initial air offensive is not solely a function of the U. S. Air Force. This country's total military power is the combined strength of the Air Force, the Navy and the Marine Corps.

Dentfield said that procurement of additional B-36s should be postponed until the report on it by the Weapons Systems Evaluation Board was completed.

If it alleged designing and designing to proceed directly to mass procurement without evaluation to the extent that the Army and Navy may be involved and that the strategic concept of war have been an uncertain weapon.

**Approved B-36 Purchase**—USAF officials testified previously that the Air Force planned to use 17 B-36 bombers in a total cost including prototype development, of about \$1 billion. Dentfield said no more should be allowed to proceed with weapon procurement without JCS approval and admitted he had approved the purchase of B-36s in 1948. USAF B-36 purchases when they were submitted in JCS last April.

Dentfield also charged that there is a study program within the committee which is being used to select the Navy to a navy and anti-air warfare service as the grounds that "any public air power must be available for strategic purposes."

Dentfield said Navy would not be able to select, manufacture, and correct target focus as necessary to attack submarine bases, shipping and training areas. Naval personnel must be available to handle the air warfare and anti-air warfare groups must find and destroy submarines in all water patrol planes, helicopters and blimps as necessary for the defense task of locating scheduled submarines.

**Wants Full Partnership**—Dentfield charged the Navy was not being admitted to "full partnership" in the unified Defense Department and needed cancellation of the \$4,000 million authorization. He said the chief of Army Chief of Staff Gen. Omar Bradley, Dentfield said he received a newspapered press release announcing the super-charge cancellation by Defense Secretary Louis Johnson only

40 months after he signed the report of the JCS endorsing the "massive" approach on the Soviet front.

DeWald asserted that the "tentative" cut of \$550 million below the Navy's autumn fiscal 1950 budget ordered by the Management Committee headed by Gen. Joseph McNarney was "first" at Sept. 8. DeWald said that Navy had no choice but to make Navy aviation about two-thirds of the cut since ship building had already been cut 68 percent and electronics procurement reduced 40 percent. He did not mention that 500 anti-submarine warfare planes had previously been shifted from Navy inventory budget by the Navy and the Budget Bureau.

Case for Carrier-Vet case for the report center was argued by a galaxy of prominent Navy war veterans including:

Admiral William H. P. (Bill) Bligh, commander of the Atlantic Fleet. Bligh disagreed with both Staff and Office as their belittling of the effects of strategic bombing in World War II. Bligh and the U. S. strategic bombing survey report "shows clearly that the loss of attack had a very great effect on Germany's oil and steel industries, and her transportation put a marked effect on her general economic activity and the morale of her people."

Bligh said, however, that British "area bombing" by night was "quite as effective" and that no strategic bombing was effective until long-range carrier fighters and very large numbers of bombers were available.

Navy Atom Bombardment—Blending the carrier that the Navy has a secondary mission of strategic atomic air, Bligh said that land strategy is signed to Navy aviation may justify av-

ing the atomic bomb. The atomic air strategy for operations of the supercarrier USS United States could have accelerated strategic bombing if required, Bligh asserted.

The carrier task force is now the spiritual of Navy power, Bligh told the committee, and it is needed to control the sea against any opposition including land-based airpower and submarines. He said that it is nothing on the horizon to replace it and until the best Navy mind agree that a substitute has proved it "should not be considered nor its development curtailed."

Admiral Richard L. Greenly, commander of the Eastern Atlantic and Mediterranean Task Force. Greenly said that aerial operations in a European area in event of war could only be supplied by fleet air support and fleet air support in Europe would require some kind of carrier and carrier forces provided in the present Navy, he asserted.

Casualty told the committee that U. S. Naval requirements in the East on Atlantic and Mediterranean are mounting due to the coming of overall British naval strength and that unless strong U. S. forces were available for immediate deployment there, our military operations and those of our allies "would be hampered."

Rear Admiral Leo De Flaminio, senior specialist in synthetic training device and aircraft problems. De Flaminio pointed out that development of the super-carrier is necessary to be helped technically against the disaster of future war. He said the vulnerability of the carrier has been greatly exaggerated and is not borne out by its Pacific war record.

"The carrier has not become obso-

lete like the battleship whose guns have been destroyed by the striking power of aerial weapons," De Flaminio asserted. "We will the carrier become obsolete until planes it carries on its back have become obsolete themselves."

Upson Train—De Flaminio urged a test and evaluation of the D-16 in terms of its possible opposition by means of a joint operation between Strategic Air Command and Naval aviation for aerial war games over sufficient time and with sufficient preparation to develop tactical data which will form a factual basis for guidance in planning a weapon development program.

"If such a program seems extravagant," De Flaminio told the committee, let an experiment be conducted to see whether it is necessary to explode atomic bombs in peace time to gain factual knowledge. No one has betrayed the tremendous cost of that experiment knowing it was necessary for our security.

Capt. John S. Thack of the Naval Air Training Command. Thack told the committee that carrier-based air power was doing every strategic bombing on the ocean before they reach the United States. Outlining the future role of carrier warships, he pointed out that the threat of surface carrier attacks would have a potential enemy to spread his defenses among his own planes and ground concentrations against any principal direction of attack.

Thack maintained that only high performance fighter can meet command of the air and that carrier-based air power is the only method by which high performance fighters can be put into use over many areas of the world because carrier-based planes cover less than 100 of an administrative unit on ships and under one 500 by air,

they can deliver 25 times the weight at height on a target possible through use of land-based conventional bombers in any given length of time, according to Thack. He asserted a last carrier task force was not a profitable target for atomic air attack.

## Alcoa Strike Effect On Aircraft Slight

Strike of CIO workers against Aluminum Company of America has cut off 30 percent of Alcoa's production and 25 percent of the nation's total output. But the situation is not critical for the aircraft industry and will not be for some time.

Alcoa has a sizable stock of aluminum sheet and its aircraft and large quantities of ingots. In general, aircraft manufacturers have been substituted in various of their.

No Immediate Push—The plane builders are allocated on standard stock. Properties say that there won't be any push for some time—yet—and even that on all steel.

Alcoa's Lafayette, Ind., plant, an important producer of aluminum extrusions, has been struck. This plant has more capacity than the other aluminum plants.

New Plant Ready—Alcoa has struck at the Cleveland, Garwood, N. J., and Vernon, Calif., plants where aircraft fuselage and stringers are made. Two more Alcoa sheet-producing mills in New Kensington, Pa., and Alcoa Tenn. have been shut down by the strike. But the company has a brand new sheet plant at Des Moines, Ia., which has never been run at full capacity because of its inefficient nature.

If Alcoa can't satisfy its demand directly through its stockpile plants, aircraft contractors may turn to its competitors—Kaiser and Republic.

Strike Losses—Losses in the Alcoa strike are those:

The company has a pension plan and health insurance on which employees do not contribute. Pension cost the firm 7 cents an hour and insurance 2 cents an hour. Alcoa has offered to increase these figures to 6 cents and 4 cents, respectively, and to pay the entire cost of pension and insurance as represented by the President's Steel Board.

However, the company said that pension and insurance be subject to adjustment later on the basis of any change in the social security laws affecting those benefits which the employees receive from the government.

The union has refused to the strings to the agreement. Alcoa contends the union's position derives from the union's refusal to take the union for its first flight. The union and stop error is covered by two Fiat & Whitney R3500 engines. It is estimated to have a top speed

## Bell Strike Ends

The 79 week old Bell Aircraft strike came to an abrupt end last week through the conciliatory efforts of N. Y. State Board of Inquiry. Dr. Edmund J. J. Day, board chairman, represented that the company and union had "mutually agreed upon terms for resumption of work at the plant."

The agreement, which had been signed by both sides, was stated later by the striking Local 560, United Auto Workers. It provides that the men return to work, while all others in dispute be submitted in the board of inquiry for arbitration, the board's decision on all matters to be final.

## CAA to Centralize Prop, Engine Staff

More to centralize the Civil Aviation Administration engine and propeller technical staff in Washington, where all certification of new engines, props and propellers will be handled hereafter, is being stated by CAA.

Administrator Del Bartlett has already advised the Aircraft Industries Assn. that the consolidation of certification procedures will be put into effect shortly, thereby according to aircraft industry requests for the move.

For the last five years certification procedures have been handled in New York City and Chicago regional offices.

Two Phase—Two alternate proposals are being considered. One calls for moving the two regional technical engine and propeller units into Washington. The other would have part of the staff in the regional but place under direct control of the Washington tech-

nical staff instead of under the regional administration as has been the case. It is believed that the more complete centralization will be chosen an order to eliminate the time lag which would ensue between regional and Washington offices if the half way manner were adopted.

More will not entail a large shift numerically in CAA personnel. Recent reorganizations from the regional technical staff have cut the number to be moved to a total of five persons from both regions.

Single Standard—Importance of the shift in the technical industry however is far out of proportion to the size of the personnel involved. It will insure for the first time in four years a uniform procedure and single standard for all new engines and new propellers and a single coordinated coordination of certification. Representatives from the Washington office can be sent out overnight to see engine or propeller plant in the country, and will have final authority to make such decisions, which previously have been deferred until the regional offices could get Washington authorization. Result will be in many cases a savings of several days' time.

Policy Differences—Still more important however will be the elimination of differences in policy between regions and the Washington office. These have been headwinds to maintenance and men of various engineering skills. Typical of such differences was a recent case involving the central time required for a certain propeller. Regions where it was certified at one interval time interval, while other regions in which it was not used, the Washington office made another conflicting interval time ruling.

Quinton Divided—While there are



THUNDERJET GARLANDED WITH ROCKETS

The so-called subsonic engine at Eglin Field, Fla., immediately entered a head-on collision with the Republic F-84, performing as a fighter bomber. In addition to its normal complement of six M-1 Wild geese,

the plane carried 12 HVAR rockets, each weighing 140 lb. Although rockets can carry 36 HVAR and two "Tiny Tim" rockets (no pilots used the carrier rocket), 12 HVAR, two Tiny Tim and two

210 lb. weight belt rockets. JATO-powered F-84s have been taking off at Eglin at 24,000 lb. gross weight. F-84s power is supplied by an Allison J35-17 jet engine rated at about 1800 hp thrust.



BEFORE FIRST FLIGHT

Clove Aircraft Co.'s XP-431 is shown as it prepared to take to the air for its first flight. The design and construction of the aircraft was completed by the company in 1948. It is estimated to have a top speed

of over 250 mph and a cruising speed of 300 mph. Close estimates the XP-431 can carry a useful load much greater than its empty weight of 21,000 lb. Service ceiling is estimated at 25,000 ft.; range 150 mi.



both sides, industry agitation for a curbing of construction of aircraft carriers from procedures in Washington from the regional office, again is more desired as reference to this matter. Another CAA study is expected to be made on this matter.

It is understood that West Coast aircraft plants generally are not dissatisfied with the existing regional office information procedures, and might prefer it to a centralization in Washington. Several personnel already transferred, however, have expressed a desire for centralization of aircraft certification.



DAMON in Ambassador's capsule seat.

## Buying British?

TWA president sees little U. S. market for England's new planes.

The objective area of new British transports at the recent Fairbairn show continues to get into action from U. S. airline officials, but considerable comments on possible British sales to U. S. carriers are tangential.

TWA president Ralph Damon, returning from Europe last week, told a New York news conference that he had seen four of Britain's new stable of transports—the de Havilland Comet, the Bristol Britannia, the Argosy Ambassador and the Viscount Viscount—and had flown in the last two. He found them "very impressive."

But like Captain Admiral Cope, British Ambassador (page 18), he does not think they will be sold in this country despite the price advantage shown during the de Havilland show.

• **Lack of availability.** British European Airways, which has ordered both the Ambassador and the Viscount, is being gestured a delivery date of 1955 for the

Ambassador, and 1952 for the Viscount.

• **Maintenance problems.** British new aircraft are not designed and stocked parts would be a traffic headache. There is also the matter of different instructions for materials and different standards.

• **High fuel consumption of jets.** Damon says he has never been able to get jet fuel consumption figures that show any promise of economy. He noted during the Comet in flight because it was powered solely by the Bristol and was doing fuel flow meters in the hope of finding why fuel consumption has seemed so high.

• **No market opportunity over U. S. passenger lines.** Damon told American Airlines that he was so impressed by the British planes he was looking for them the first British planes he would be designed for rail, commercial airline operations.

• **Foreign Markets.** Now does the TWA boss see where British planes such as the Ambassador will be marketed competitive with U. S. aircraft in the export market? The Ambassador, for instance, is a 40-passenger jet engine high wing pressurized cabin plane. With that capacity, and the shortage of dollars abroad, it might be expected to cut into the Convair-Lear foreign market.

Damon doesn't think it will remain for the reason it is too big, and foreign traffic too small. BEA, for instance, plans to put about 72 seats in its Ambassador. "Influence from Britain's is made in that traffic potential on our own airlines won't be enough to fill that many seats."

• **High Fuel Load.** Damon said 21 days. European and Near East airlines have found economic maintenance schedules improving everywhere except in Europe. The cost has been argued well for TWA's 1952 "Holly Year" plans for boosting traffic across the Atlantic to Rome. The British government has launched a housing program that will make about 60,000 beds available for pilgrims, and has promised to keep living costs and other prices down. In addition, de Havilland has made long and landing in Europe cheaper for American tourists.

TWA is expanding both its domestic and its fleet to handle the high New York traffic. There will be few types a week to Rome. The 70 new Convair nose bought for delivery next year will add 1000 seats, making it possible for TWA to carry 52,000 passengers to Europe next year.

• **Standardization.** In addition TWA is launching a five-month program to increase and standardize the seating capacity of its present 13 plane Convair fleet. The new Convair Model 440 Convair now used on domestic transcon-

tinental schedules said that their present jet capacity, assumed from 70 to 57 seats, would be 749. Convair's new international version will be designed to carry 44 instead of 40 passengers.

The 20 new Convairs will carry 40 passengers. When the 32 Convair new jets, an additional service on Transcon will be done by schedules late in 1950 these jets will be designed again to hold 57 passengers.

• **Modification.** Additional seats will be possible by increasing seat racks and installing more compact washrooms. Three washrooms will be installed in the cabin to provide visibility from the side seats.

Work will be done at TWA's main base and in other locations at Kansas City.

## Flight Safety Group Makes Four Awards

Four awards for outstanding contributions to the field of flying safety were presented in New York last week by the Flight Safety Foundation to Hugh De Haven, research associate at Cornell University; Dr. Leonard Greene, president of Safe Flight Insurance Corp.; United Air Lines; and American Airlines.

The awards to be sponsored each year by American Airlines were made in each case in recognition of an individual service which had clearly demonstrated its value in achieving safety enhancement of aviation.

Achievements were:

- **Hugh De Haven**, member of the Convair Advisory Committee for Air Research for his studies of aircraft design principles which will increase the safety of airplanes in emergency situations.
- **Dr. Leonard Greene**, president of Safe Flight Insurance Corp. for his development of a successful risk rating system for aircraft, recognized and adopted by the insurance industry to reduce the accident potential of the insured aircraft.
- **United Air Lines**, for the progressive, professional cooperation with the U. S. Coast Guard and "Volunteers" in conducting of search rescue parties being to deal with aerial in overwater flying.

• **American Airlines** for progressive New standards in crew training of the record for "This War Out," a motion picture which shows the most efficient procedure to be taken by crew members to assure passenger safety in the event of an emergency occurring in flight.

Selection of recipients was made by the Flight Safety Foundation, in consultation with the National Safety Council, the Aircraft Owners and Pilots Assn., and the director of the Institute of the Aeronautical Sciences.

## Air Races May Stay in Cleveland

National Air Races are expected to be held in Cleveland in 1950 again if the air race management can, after consulting representatives and GAA of the safety of the race planned.

Committee of NAA meets in Washington Oct. 25 to consider recommendations of a technical sub-committee on revision of 1949 air race rules, and another sub-committee on the Coast Guard race.

CAA Administrator Del Kestel has assigned his assistant, Harold Rought, to review the technical committee on revision, but pointed out that this did not necessarily mean CAA would accept the committee's recommendations.

"We would like to see the National Aeronautics Assn. and the National Air Races work out their differences and have encouraged them to take the initiative," Kestel said. However we are not interested in going along with a renewal of flying races in 1950 unless it can be put in a location where it is not hazardous to continental areas.

The revision sub-committee, headed by Roger W. Kabe, chairman of the NAA, stated committee will present specific recommendations developed from general suggestions given at an earlier Washington meeting. At the earlier meeting were representatives of CAA, racing pilots, air race management and the NAA control board. Their statements called for:

## Air Power Budget Facts

Here is how the fiscal 1950 air power budget, described on page 7, stands as approved by Congress.

	New Contract Authority (billions)	New Planes (billions)	Average Weight (billions)	Yield New Obligations* (billions)
USAF	\$1,993	1,135	52	\$6.6
Navy	557	145	9	14.0
	\$2,573	1,280	41	\$20.6

\* Including procurement funds and other major items of the new USAF budget, including \$1,100,000,000 for the budget of previous contract authority, \$210,000,000 for research and development, \$50,000,000 for radar warning network, \$1,145,000,000 for maintenance and operations, \$1,381,000,000 for military personnel, \$25,000,000 for administrative salaries and expenses, \$77,600,000 for USAF reserve, and \$114,000,000 for Air National Guard.

• **Running offside** at which races are flown.

• **Reboring** of closed course to more closely define locality.

• **Additional safety equipment** to be worn by pilots.

• **Extension** of present medical pilot requirements.

It is understood that working at 1950 rules may be made compulsory for the high speed races.

• **Goodbye Reserves.** Revision of the 1950 Congress might not require them but the 1949 race after projects of other pilots.

Protests by other pilots against the "Without planes sent withdrawn" just before the race. It was pointed out that Williams had not intended of the "should have" procedure until he arrived at Cleveland.



First flight now of the Lockheed XF-80, experimental supersonic prototype fighter, now undergoing R&D testing at Muroc AFB with Lockheed test pilot Tony LeVay as

### LOCKHEED'S AIR DESTROYER

the model. (Normally large 328-gp.) wingtip tanks are shown which help to give the Lockheed fighter its unusually long range to a jet plane. Powered by two West

inghouse J36 turbojets, and Side afterburner, the XF-80 has no nose more than 29 powered flights and has exceeded Mach 1 (AVIATION WEEK, Oct. 10)

## McDonnell Profits Over War Peak

Company net earnings for fiscal 1949 are reported as \$1,731,832. Backlog is over \$84 million.

McDonnell Aircraft Corp.'s report for the fiscal year ending June 30 revealed that the company has achieved the unique distinction of being the only aircraft builder to have surpassed wartime sales and net earnings in the peacetime period.

This record, accomplished without benefit of congressional aid, is another reflection of the ability to return satisfactory profits on military business.

For the fiscal year ended June 30, 1949, McDonnell Aircraft showed net sales of \$12,695,166. Adding working process to the volume of completed production would have increased billings to \$15,676,111. During the year ended, the company's peak production was for the fiscal 1949 year when total sales aggregated \$21,704,225. For 1945, sales reached virtually unchanged at \$17.7 million but dropped sharply to about \$6.6 million for 1946 as peacetime readjustments were being effected. A steady improvement set in during 1947 with total sales reaching about \$11.3 million. Sales were about doubled for 1948 with billings of \$24.7 million.

■ **Peaked \$1,731,832**—For the most recent fiscal year, McDonnell showed net earnings, after all charges and taxes, of \$1,731,832, equivalent to \$7.97 per share. Share price in the market was \$24.75. Best earnings performance during the war years was for the twelve months ended June 10, 1945, when net profits of \$15,749,705 were recorded. This was followed by a net loss of \$235,177 for 1946. Subsequent operations assumed an accelerated profitable rate when net earnings of \$590,870 for 1947 more than tripled to \$1,675,327 in the following year.

■ **Exclusive Military Business**—McDonnell Aircraft was incorporated in July, 1939 with two airplanes and no orders. After accumulating \$19,495 in cash capital and assembling 17 engineering employees, the company received its first order in June, 1940. The Army Air Forces awarded it \$1800 for a per cent surplusage design contract in cooperation. The company has since diversified from engineering its activities to military plane and subcontracts.

During its first ten years McDonnell has produced more than \$115 million

at war, all for the U. S. Government. ■ **Business Growth Back-Ten**—The company's recent structural development is significant in that earnings have consistently been in double figures in the past. On June 30, 1948, the total capitalization consisted of 16,365 shares of common stock and 2236 1/4 shares of preferred stock. The entire net worth was valued at \$122,900.

Two years later, the enterprise had a net worth of more than \$12 million. The most recent capital structure consisted of 227,424 shares of common stock, per share \$1 per share, and \$254 shares of convertible preferred stock with a par value of \$100 per share.

A detailed analysis reveals that more than 54 million of the company's net worth was contributed by past earnings. In other words, during the post-war decade while additional shares were sold to provide needed working capital, such associated financing is estimated to have aggregated less than \$1 million.

Nevertheless, the investment in this enterprise during its formative years represented a substantial risk with little assurance that profitable results would ensue. This was venture capital in its most traditional role. In this instance, the original owners of the enterprise have had their faith and judgment vindicated and have gained accordingly.

■ **Share Conversion**—McDonnell's recent capitalization was subject to some dilution in the immediate future. The \$254 shares of preferred stock are convertible into common at the rate of 10 shares of common for each share of preferred. While the preferred currently pays a noncumulative 6 percent dividend in contrast to no distributions on the common, the conversion process has been underway since 1944. At the outset there was 10,000 shares of preferred stock outstanding, before conversion into common was made. Should the common be placed upon a dividend paying basis and should such payments exceed 60 cents per share, then an income standpoint it would become immediately advantageous for the preferred shareholders to convert into the common. It is more probable, however, that the management may choose to limit conversion by calling the preferred at the stipulated price of

\$105 per share. With the common currently selling around \$28 per share, it is obvious that the preferred shareholders would elect to convert these holdings into common and receive the equivalent value of about \$206 rather than the stated call price of \$105 for each share of preferred held.

Even further dilution of the common stock would occur upon the exercise of purchase warrants at \$10 per share on 79,973 shares of common. The bulk of these warrants are held by J. S. McDonnell, founder and president.

In the event of complete conversion of the preferred and the exercise of all outstanding warrants, the present outstanding common stock would be increased over 90 percent to bring the total common shares to 338,697.

It is obvious that in this dilution process, the book value of \$30.75 per common share as of June 30, 1949, would be seriously diluted.

The company's financial position reflects the consistent improvement in sales and earnings. As of June 30, 1949, net working capital was in excess of \$4.1 million, representing a far cry from only \$28,410 existing in the same category as of June 30, 1941.

■ **Property Costs**—Landing in this plant facility at Lambert-St. Louis Municipal Airport, McDonnell has been able to avoid extensive property expenditures.

Current estimates point to a relatively high continuing rate of production for the fiscal year to end June 30, 1950 and perhaps for the immediate period beyond. As of June 30, 1949, the company's backlog was reported at \$61,396,041. The annual report noted that as of September 23, 1949 the backlog was over \$84 million.

■ **Navy Golden-Mean production** for McDonnell is recent awards has ordered under the Brazilian delivery to the Navy. This government is divided between two contracts, one for 50 F2H-1a for which deliveries were started in August, 1948 and completed about mid 1949; and the second for 179 F2H-1b. The first of this latter series was flown in August, 1949 after delivery completion, awarded by January, 1948. In September, 1949, the company received a contract for additional F2H-2 bombers, of which some are night fighters and other photo-reconnaissance planes.

The McDonnell management takes a fairly optimistic view of the future with the conviction that its present backlog will not be completed until December, 1951. Further, it expects a normal follow-up business in existing production contracts, plus a normal amount of production work from present important contracts to result in a satisfactory continuation of business.

—Sieg Altshuler

## Parker Precision Adds Power to Jets

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## AERONAUTICAL ENGINEERING



Pratt & Whitney turbine is at top. Flow enters from forward through compressor to one through combustion chamber enters engine length.



Compressor rotor (left) has 40 blades, each disk supporting eight rotor stages. Reduction gear (right) is composed of epicyclic teeth.

## Analyzing the Bristol Proteus Turboprop

Engine uses "free turbine" arrangement. Will power Brabham 2, Type 175 liner, Princess flying boat.

Details of the Bristol Proteus turbo-prop-turbine's second, largest—have lately released by the Air Ministry. Only British turbo-prop with more power in Armstrong Siddeley's Pylons (developing over 4000 hp.)

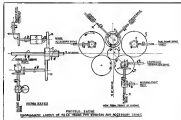
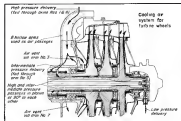
Advanced as specially suitable for naval installations, the Proteus is designed for economy within the 300-400-mph range, at 30,000 to 40,000 ft. It is a good example of British progress

with this type of engine, which they undoubtedly think will have wide application in the European field. At sea level static conditions, maximum power developed is 3280 propeller hp, plus 800 lb. jet thrust. At 35,000 ft. and 500 mph, the engine develops 3260 hp, plus 160 lb. jet thrust.

Specific fuel consumption at sea level is .658 lb./hp/hr. At 35,000 ft. (350 mph) it is .510 lb./hp/hr.

►Use.—The Proteus is slated for use in the 110-ton Brabham Mk. 2, 140-ton Saunders Roe Princess flying boat, and later models of the Bristol Type 175 four-engine, medium-range airliner. For the 175, company estimates indicate that the Proteus will give the craft a cruising speed of at least 75 mph above that of the Constellation.

In both the Brabham 2 and the Saunders Roe Princess, eight of the engines will be used in two angled pairs in each wing to drive contra-rotating props. In addition, the Proteus will carry a single unit on each wing.



### Bristol Proteus

Overall Length (inclined case, all pipes removed)	511.15 in
Overall diameter	35.5 in
Basic weight	7,900 lb.
Propeller rotation	1,011 rpm
Propeller shaft size	5.0 I.C. Standard No. 6
Clamp air level static	1260 ft. + 900 ft. three
at 5,000 ft., 540 mph	1260 ft. + 540 ft. three
Specific fuel consumption	
at level static	0.485 lb./hr./hp.
at 5,000 ft., 540 mph	0.510 lb./hr./hp.
Compressor rpm	10,000
Propeller turbine rpm	10,700

General Operation—Air enters the inlet at the rear of the compressor, fed in by ducts to a plenum chamber. It passes through the stage compressor before entering a single centrifugal stage. Then the centrifugal compressor air flows into combustion chambers. It

fed clockwise around the compressor casing to give the next compressor (3rd) its air. Recirculation of air from forward through the compressor to rearward through the combustion chamber reduces engine length. The last gases then pass through ducts to the

first two of turbine wheels.

A feature of the Proteus is the mechanical separation of the compressor and propeller turbines. "One turbine" arrangement. This is intended to simplify the propeller system and permits use of a much smaller starter motor.

Three turbine stages are used to absorb energy from the gases. First two rotors are coupled and provide the power required to drive the compressor. The third stage turbine is coupled to a shaft passing through the compressor to drive the propeller via an epicyclic reduction gear.

After leaving the turbine, the gases pass to a centrifugal outlet nozzle which scavenges energy potentials yet threat to engine propeller thrust.

Compressor—A high compression ratio is achieved via of a 12 stage axial compression stage followed by a single centrifugal stage and rotating at a maximum design speed of 10,000 rpm.

Because of the high rotational speed, compressor rotor is of disk construction. Each of the 12 disks supports a single vane stage. At either end they are bolted to hollow steel shafts, the entire assembly being held together by 16 long, high tensile bolts passing through the 12 stages.

These bolts are not subjected to shear stress since the torque is transmitted from one disk to the next via ducts in the face of each.

Compressor blades are low compression high speed sections. Ducts and blades are light alloy and the latter are annealed. Rotor blades have "fir tree" ends. At inlet and prevent air flow, and are kept at correct spacing by hydraulic jacks. Stator blades fit into an unbalanced pattern of directed sections in the compressor casing and are held in position by bolted metal strips.

Blades between the ends of the stator blades point as bleeding at certain stages, for cooling purposes. Compressor casing is cast in alloy, bolted to galleys.

Discharge of the compressor, air passes through an annular duct in the intermediate casing before it enters the centrifugal stage. Eight guide vanes in this duct hold the center section housing two half bearings which support the front end of the compressor shaft.

Because of the compressor size in the axial compressor under maximum rpm conditions, and the high rotational speed, the double-bearing centrifugal supports a steel shaft. It is bolted to a short shaft running in a roller bearing and is fitted on either side by the shaft bolts to prevent air passing to the intermediate casing or the center casing.

Construction—Chamber—This was constructed longer than in previous designs to allow the hot gases to be thoroughly mixed and at an even tem-

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SEATING: C-11  
BOMBING

COMBAT: C-16  
PILOT

COMBAT: C-17  
PILOT

FORWARD: C-19  
PILOT AND B

BOMB: C-20  
PILOT

position before entering the turbine.

From the diffuser casing, compressed air flows to the right compressor stage. These are of conventional design, with centrally placed impeller at the upstream end of the chamber.

Air is fed in through a small vent casing, followed by the primary and secondary air holes in the inner walls. Short is reported to the fuel pump for secondary flow and to the compressor air, to ensure good mixing and a centrally burning flame. Two center plugs are used and combustion chamber is interconnected for three propellers.

Flaps in the outer casing hold the liners in position, while the liner down

cases and have a spring flap free to slide in the outer casing.

The liner is made from Inconel 75, water cooling from mild steel sheet joined with aluminum.

► **Turbine.**—A turbine wheel is heat treated stainless steel carrying 10 rotor-blades. Turbine nozzles are also of this material and are set in segments containing three to seven blades, starting with five stages. Segments are bolted to diaphragms between the turbine wheels.

Because of the high pressure drop through the turbine, the smaller air holes can be assembled separately and completed later. This allows the two com-

ponents for the turbine blades so that expansion is not too rapid.

First turbine wheel has an integral short shell carrying a modified coupling. This rotor and the second stage rotor have radial sections on opposing sides, and are clamped together by a three passing through their bores. The short sections slide into in two bearings located by the turbine mounting spider. Each rotor is a ball bearing taking its thrust from the turbine.

The drive shaft couples are to the compressor shaft via coupling gear teeth, so that the compressor and turbine can

be assembled separately and completed later. This allows the two components to expand freely, independent of each other.

► **Reduction Gears.**—A high ratio reduction gear brings the propeller turbine speed to a suitable value for efficient propeller operation. Gear ratio is 11:1 or 11.9:1 and is accomplished by a compound spur gear train.

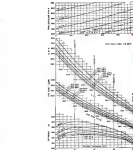
Power is supplied to a pin wheel, which drives four planet wheels. Scattered planet gears on the four planet axes rotate against a fixed gear. These planet gears are enclosed in a casing which rotates with them. The casing bolts to the propeller shaft.

Load on the fixed gear is balanced by a counterweight consisting of eight pins in rotation, equivalent of under pressure. From this pressure, power applied to the propeller is balanced, providing a suitable reduction of the gear performance.

The gearbox is supported in its load and by a ball bearing on the propeller shaft, and at the rear by a roller bearing.

► **Shaft and Accessory Drives.**—Two shafts make are located at the top of the gear casing, enclosed 108-deg to each other (see accompanying sketch). These drive a bore gear A connected to gear gear B through a dog clutch. Gear B engages with C applied to compressive rotor shaft.

Gear C also forms the connecting link between the compressor shaft and the drive to the fuel and oil pumps. Gear gear D making with C drives the oil pumps through a set of bevel gears below the prop shaft. Oil pump and pump are in the bottom of the gear casing.



Performance charts, ICAN condition. Compressor gas 10,000 (5 mile limit).

Fuel pump, just above the combustion in the casing side, is also driven from gear D through gear E and bevel gear F. Pressure is also made for another fuel pump in other necessary time on the opposite side of the casing.

► **Fuel and Oil Systems.**—Main oil pump, below the forward gear casing, delivers oil at 650 psi to the pump pitch control mechanism and to a reducing valve. The pitch control is operated by a fueling pump whose position is controlled by oil from a differential pump, with a manual override for feathering or lock ring.

The reducing valve delivers oil at 60 psi to three outlets. One supplies oil to the differential pump and to the reduction gear, where it simply acts as a lubricant. Second outlet feeds the decompressor pump, while the third oil jet delivers oil to a manual valve whose pressure is reduced to 30 psi, thus feeding to a reducing pump.

The reducing pump delivers a predetermined flow directly to its set of bearings and indirectly to two bearings. Oil is drawn from these bearings and bottom of the reduction gear casing to the pump, then returned to the tank via filter, overflow pump and oil cooler.

Fuel pump is a variable displacement type, and supplies oil at pressure of 750 psi.

Pilot's control consists of a rack in the high pressure supply line to the engine.

► **Intermittent Pump.**—This is used to maintain a constant ratio between gas of compressor and propeller turbine



## ...USES WHITTAKER HOT AIR VALVES

Seen in the standing across the sky, the new Martin XB-51 is the latest of the Air Force's postwar jet strength. Powered by two turbojet engines, the XB-51 is a revolutionary high speed bomber designed specifically for the destruction of ground targets. Like other outstanding members of the XB-51 is equipped with a Whittaker hot air valve. Whittaker's shock wave operation, but not without control the biggest kind of jet engine compressed air directed into the hot air valve. Whittaker's shock wave operation, but not without control the biggest kind of jet engine compressed air directed into the hot air valve. Whittaker's shock wave operation, but not without control the biggest kind of jet engine compressed air directed into the hot air valve.



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center section carrying eight steps. Outer steps are to be angled inward to the center section and have full, trailing-edge tips and full-curved airfoils.

Conventional tail assemblies will have thin-coated control surfaces with cowling from the fuselage, elevator.

Big type, 75-pd. fuel tank with integral booster pump will be located in the center section. A dual body tank, which feeds directly into main line, can be applied to underside of center section.

Nine-cylinder, Wasp Jr. engine will be easily removable with 10-pd. oil tank. Sixty mounted oil cooler and other accessories at nose plate power up access to the engine will be gained through cowling which is conveniently hinged at the throat.

Fixed landing gear is to have long stroke, slow progressive struts and hydraulic, single disc brakes. Problems have been solved in the center section for installation of retractable gear of required size. Tail wheel is to be coupled to outrigger controls but may be disengaged to freely rotate by moving control stick forward.

Available specifications on the new trainer are: Span, 53 ft. 9 in.; length, 28 ft. 10 1/2 in.; height, 5 ft. 3 in.; gross wing area, 250 sq. ft.; wheel track, 10 ft.; maximum gross weight, 3660 lb.; max. loading, 147 lb./sq. ft.; power loading, 6.6 hp./sq. ft.; stall speed, 60 mph. at sea level, 407 mph. @ 2300 rpm; maximum cruising power at 5000 ft., 285 hp. @ 2000 rpm.

## Firestone Produces Rubber for Arctic

Development of a synthetic rubber polymer that will behave instead of shatter at -73 F. has been announced by the Firestone Tire and Rubber Co., Akron, Ohio.

The ability of the new rubber to remain resilient at low temperatures may help solve many problems connected with operation of machinery, motor vehicles and aircraft in Arctic regions, according to the company. It points out that rubber tires, engine gaskets and bellows previously have frozen hard in such of -60 F.

Tires made with the new polymer rubber, however, do not soften or become permanently flat upon being pushed, and handle dirty loads and they melt, even at -73 F.

Firestone's research staff has been conducting researches elasticity, flex is kept and structure tests on various types of Arctic rubbers under contract with the U. S. Navy's Ordnance Department. Additional research and test programs are being made in collaboration with the Office of Rubber Research.

## Evaluation of New Stiffener Form

Curved web Y-section configuration evolved as high efficiency panel member in series of NACA tests.

By Robert McFarlane

It has long been held that there are two reliable clues to an airplane's geometry: shape of its vertical tail surface and the surface form used in its structure.

These two design habits have characterized most of the airplanes produced by companies, design groups or even individual designers the world over and suggest that they are selected by individual preference, even though weight technical reports can be produced to justify these forms.

Question of which of these forms had a substantial effect on the performance of the airplane as which they appeared is a point that may be long debated, but the fact is becoming increasingly clear that aerodynamic and weight have been their grip on the Preliminary Design Group is based on mathematically derived curves and shapes.

That change marks the passing of the old-time "dog-eared" of rounded individual repetitions and in its stead there are now buttons of squariness, rectangular surfaces nearby, that perform the stretching complex and manifold functions involved in the design of a modern airplane.

And their opinion notwithstanding "most efficient too-or-there" for it is the degree to which they approach that goal that determines the success or failure of the design.

Efficiency Considerations—"Most efficient structure" has been a design goal since the advent of stressed skin construction but it has always suffered from a wide variety of definitions that not only do appear value in an order.

Comparisons of two different aircraft structures on the basis of "percent structural weight" (of gross) is one such definition and account is taken of variations in design load factors, allowable stresses used and a variety of such factors as maintenance, production costs, etc.

Although the familiar strength/weight ratio is not a wholly satisfactory criterion for comparison of stress structural elements, it has gained wide usage because of its simplicity.

One of the basic problems in aircraft structure is the design of wing compression panels of minimum weight. Obviously, the lighter the winging structure, the lighter the weight of the airplane. Working stresses are determined by the distribution of stresses between skin and stiffeners, and

the ideal panel is obtained when instability of the skin occurs simultaneously with primary and secondary instability of the stiffener.

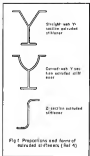
Equation—This relationship is defined in Reference 1 in terms of panel geometry by three equations—

The first is  $P = P_0/\lambda$  (in which  $P$  is actual design load,  $\lambda$ , area of the panel per inch of panel) gives the actual average stress,  $\sigma$ .

The second is  $\sigma = \sigma_0/\lambda$  (in which  $\sigma_0$  is modulus of elasticity, coefficient of effective modulus of elasticity,  $E$ , length of the panel, and  $\sigma_0$  is value of  $\sigma$  in a form of Euler's equation giving the probability of the panel as a whole.

The third is  $\sigma = K\lambda^2/b^2$  (in which  $K$  is crippling constant,  $b$ , thickness, and  $\lambda$ , compressive load) provides a plane allowable stress for the crippling stress producing large deformations that destroy the form of the cross section and result in destruction of the panel. The ideal panel is obtained when  $\sigma = \sigma_0 = \sigma_c$ .

Ref. 2 combines these equations and introduces the concept of "panel efficiency" in the following equation:  $\eta = \sigma_0/\sigma_c$  (in which  $\eta$  is average stress,  $N$ , loading per chordwise inch,  $E$ , effective skin spacing including web and stiffener, and  $\sigma_c$  a constant).



of stronger panel efficiency. By comparing values of this equation for various stronger shapes, the most efficient panel design can be readily determined.

It follows from the preceding equations that the coefficient  $\eta$  can be highest value when the crippling stress and the value of  $\sigma_0$  of the stiffener are highest and when the average spacing  $N$  is low.

The stiffer must have both high column strength and high local buckling strength and these requirements immediately suggest a solution in the shape of a "Y" or "Z" as shown in Fig. 1.

Efficiency Comparison—To determine the relative efficiencies of the two forms, the National Advisory Committee for Aeronautics has conducted a series of tests in panels made up of six stiffeners and two lips welded fastened as a hydraulic testing machine.

Results of these studies in both 205-T and 7075-T aluminum alloy give the following advantages in efficiency for the Y-stiffened panel. However, a more objective method of comparison of the two stiffener forms is the design of two panels to meet the same conditions, then giving consideration of such factors as number of stiffeners, space required for the stiffeners and the distance from the main line to the ends of the center gravity of the panel.

A series of tests was carried out in this manner and indicated that the Y-stiffened panel produced higher average stresses at failure than did the Z-stiffened panel, indicating that less weight would be required for the former panel, as shown in Fig. 2. However, the latter requires more space inside the wing and closer web spacing.

During the course of the tests, several general trends were indicated by the design. For given values of load per inch of panel width and the parameter  $L/\sqrt{N}$  (in which  $L$  is length of panel, and  $N$ , coefficient of web and stiffener), the following trends were indicated:

- Weight of the panel generally increases with an increase in sheet thickness, but the highest panel is often obtained out of the thinnest sheet gauge at which a design can be achieved but with the sheet one or two gauges thicker than the maximum.
- Stress for local buckling of the sheet generally decreases with an increase in sheet thickness, but the maximum value of the stress for local buckling of the sheet is often obtained out of the thinnest sheet gauge at which a design can be achieved but with the sheet one or two gauges thicker than the maximum.
- Average spacing of stiffeners in center (lowest stress required) with an

increase in chest thickness

- Distance from the mold line to the eye of the panel's C. C., decreases in which tends to decrease the effectiveness of the panel to resist beading of the wing, generally decreases with an increase in sheet thickness.

For given values of load per inch of panel width and sheet thickness,

- Weight of panel increases with an increase in the value of  $I_0/v_0$
- Stress for local buckling of the sheet essentially decreases with an increase

in the value of  $L_c/\lambda_D$ , except at the heavy sheet thicknesses.

- Height of the stillicones increase with an increase in the value of  $L/\sqrt{t}$
- Average spacing of root lines goes with  $L/\sqrt{t}$

the value of  $I_p/v_c$ , except at the heavy chest threshold.

- Distance from the weld line to the axis of the pencil  $G-G$ , generally increases with an increase in the value of  $\beta$ .

- Radius of gyration increases with an increase in the value of  $k$  &  $n$ , but

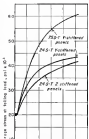
- the fact that the value of  $\sigma_{\text{eff}}$  is low, and this does not necessarily increase the effectiveness of the panel to resist local buckling.

• **Carotene Effect**—One of the ways in which the local buckling strength of the Member may need to be

- improved even further is by use of quantum in the web of the section. To investigate this possibility, the NACA

tested 50 panels having curved walls  
'Y-section stiffeners.' The panels and  
method of tests were identical to those

- These tests showed the curved-web versions had a higher average stress





## Safety Glass BY "PITTSBURGH"

GLAZING the cockpit canopy and the bombardier's observation windows of this new sky giant involved many new and complex problems. All of them were solved successfully—with the help of Pittsburgh Safety Glass and glazing methods.

Extra thick, flexural laminated glass and plastic withstands the pressure load. Mounting metal inserts provide extra strong joints, permit finish sanding, assure a smooth outer surface. The bombardier's panel has to be optically "perfect." Some panels must withstand the thermal shock of hot air used for heating. The many compound curves require separate tools and special tooling.

Meeting these requirements is typical of "Pittsburgh's" consistent policy of developing new products and new techniques. Most manufacturers of military and heavy commercial planes are using laminated transparent plastics, ionomeric glasses and pressure treated resistant glasses made by "Pittsburgh."

Get unexcelled equipment and constant research—plus the long experience of men who have devoted their lives to the making of quality glass—are at your disposal. When you are concerned with Safety Glass and glazing methods for airplanes, bring your problems to "Pittsburgh." Pittsburgh Plate Glass Company, 2349 9 Gram Building, Pittsburgh 29, Pennsylvania.



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## MUDDLING in High Places

It is time for men in Washington and London to stop toying with the problem of international trade. We of the disoriented West are at a taring post in our economic affairs. A false step by either the United States or Britain could lead quickly to disintegration of trading between the people of the world as we have known it for the past hundred years. Recent meetings of diplomats in London and Washington have not lifted us out of this danger.

By two simple tests you and I can measure the sincerity of the men in Washington and in London who are trying to solve what they call "the dollar crisis."

**One test applies to the British: Is Britain making an honest effort to re-establish itself as a real competitor in world markets?**

**The other test applies to us in the United States: Are we willing to see Britain re-emerge as a strong competitor in world markets—even in our own home market—and to help her do so?**

Today, even though both countries have faced the devastating test, the answer to these questions probably is no.

### I

The situation we face is, in fact, unprecedented in every important industrial country of the non-Communist world, except Germany and Japan; production is above previous volume; thanks largely to the Marshall Plan. Yet trade between nations is shackled as it has never been since the 18th century. And the shackles grow day by day. What is worse, two distinct trading areas—the dollar area and the

sterling area—have grown up in the non-Communist world, and the gulf between them grows wider.

What kind of leadership have the United States and Britain had in the face of this crisis? President Truman late in August wisely checked the trans-Atlantic bickering over the dollar crisis. But Mr. Truman showed no awareness of the basic question that the American people must soon decide: *Is the United States able and willing to guarantee trade between nations, as Britain did in the 19th century?*

What have British leaders offered us? Foreign Secretary Bevin and Chancellor Cripps called their September visit to Washington "one of the most important milestones in history." But they did not tell the British people, and perhaps do not admit themselves, that their Labor government must change its internal and external policies if Britain is ever to save its living in a competitive world.

Actually, the problem Britain has faced since 1945 is a colonial one. But, in the face of its grave difficulties, what has Britain done? The working day was shortened. Welfare economics have run riot. High taxes have strangled investment. Labor and capital have clung to their prewar psychology of curbs and featherbedding. Government controls and government trading have hampered private initiative. Nationalization schemes have injected politics into the struggle for industrial recovery.

Thus the policies of the Labor government have made Britain's adjustment to its new position in the world immensely more difficult. But Americans who attribute the danger of an international breakdown to British weakness protest overwhelmingly the problem. Virtually every country in the world, except the so-called free-trade dollar area, has Britain faces

continued on next page

We Americans must recognize that our economic strength unbalances world trade as does Britain's weakness. World War II increased America's superior power to produce goods. It also made the United States more self-sufficient. Then, while the world demand for American goods has risen, our demand for foreign goods, except for some raw materials, has not increased. Today we sell more to every major area of the world than we buy from it—and yet we wonder why there is a dollar crisis.

It is time for us to recognize that there are two fundamentally conflicting pressures at work in the United States. One is our desire for a big surplus of exports over imports. The other is our desire for a system of free-wheeling trade around the world. We can not have both unless we as taxpayers wish to subsidize our exports. Which do we want?

Curtis E. Colder, chairman of the International Relations Committee of the National Association of Manufacturers, says, "The battle of the foreign trade policy is essentially that of reconciling our urge to export our surplus with a reluctance to accept imports in payment for them. . . . The dilemma is an uncomfortable one to face."

## II

Here, then, are the basic questions that confront men in Washington and London. Does Britain really want expanding world trade or a high-cost welfare state? Does the United States really want expanding world trade or a large surplus of exports? So far politicians in Washington and especially in London have decided these issues because they are political dynasties.

If the people of Britain decide they want to regain their position as a competitive trader in expanding world markets, here are specific objectives that men in London should set for themselves:

1. *Lower government costs.* The British Treasury has asked for cuts of 5% in 1950. But a cut nearer 15% will be necessary, even if that means fewer government subsidies and health services. Enterprise will never survive cut costs come down while taxes take 40% of the British national income, including roughly 60% of business profits.

2. *Fewer government controls.* Only by removing controls and allowances (except on a few necessities) can Britain begin to return to prices fixed by competition rather than by government fiat.

3. *Repeal anti-monopoly legislation.* For both business and labor Britain needs a concerted drive

against all forms of restrictive, high-cost practices. This drive should put teeth in the anti-monopoly act and supplement it with legislation to end restrictions imposed by trade unions.

4. *Less restrictive trading practices.* Britain should remove gradually from its international barrier between governments if competition is ever to have free play in international trade.

Meanwhile, if we of the United States sincerely want unbalanced world trade, men in Washington must face up to four problems and hammer out workable solutions.

1. *Use of the International Monetary Fund to back a devalued pound.* In time the Fund, in which we have the controlling vote, might be used to promote convertibility of pounds into dollars.

2. *Help for Britain to meeting war-created external debts.* This might mean support for London in getting a reduction of the war debts Britain owes India, Pakistan and Egypt, for example. To achieve such a debt reduction for Britain we might have to underwrite a part of a Southeast Asia recovery program.

3. *Encouragement of American investments abroad.* Such investments should be directed primarily into enterprises which will earn dollars, such as the development of new sources of raw materials, or which will mine productivity abroad.

4. *Our own tariff barriers.* Our attitude toward this critical issue will be the real test of how deeply we believe in the merits of free world cooperation.

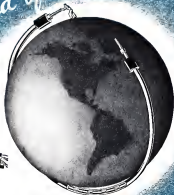
If we really want free, competitive trading between the people of the world, these issues must be met and resolved by leaders on both sides of the Atlantic. If we do not want to face these issues, then let us resign ourselves to a world wall of fire into their trading areas: the Communist bloc, the sterling area, and the dollar area. So far, Washington and London have muddled along, except in facing the devaluation problem. Clarity and courage are still needed.

*James H. McCreary, Jr.*

President, McGraw-Hill Publishing Company Inc.

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## NEW AVIATION PRODUCTS



### Hangar Material

Computerized aluminum-alloy sheet, applicable for kanger and other airport construction, is offered by Chatham Mfg. Co., Houston, Texas. Company states it can ship custom-welded air port roofing or siding to job sites in the Southwest or Middle West, with basic custom to building contractors.

Mineral is cut to exact length—diagonally if required—from Alcoa's 032 industrial roofing sheet stock, affording contractors savings in time and labor by eliminating need for cutting sheets on job. Also, there is virtually no wasted material.



### Lightweight Band Saw

Small, Model 49A, metal cutting band saw, offered by Wells Mfg. Corp., 168 Service Rd., Three Rivers, Mich., is specially designed for use in small shops and for general plant work.

With a  $\pm$  0.05  $\times$  0.05-in. blade driven by a 1/2-in. ball bearing motor, machine is capable of cutting 34-in. diameter round poles and 34  $\times$  48-in. rectangular shapes. Wheel drive provides selective speeds of 54, 108 and 180 fpm. Saw also is equipped with quick screen up and adjustable blade guides. Disk-type idler saw drive wheels run on grooved steel ball bearings. Loose and bed rock tested and mounted on 10-in. steel legs. Weighs only 115 lb., measures 64  $\times$  24 in. bed area and height to top of bed is 24 in. Floor space occupied is 168  $\times$  33 in.

### Aircraft Pulley

No-Glu instant polky, offered by the Formosa Co., Cincinnati, Ohio, reportedly helps reduce possibility of spreading flu virus around, because it is totally free of afterglow instant flume compound.

In company tests, old and new type pulleys were subjected to blow tests and both ignited. After flames were removed, combustion in new unit ceased immediately, while old pulley still was glowing brightly two minutes later.



### Versatile Motor

Originally developed for aircraft engine use, d.c. motor, made by Bendix Aviation Corp., Red Bank, N. J., can be furnished in wide variety of speeds, torque and hp. ratings.

Motor is designed in accordance with specification ANM-40 and is available for operation on voltages from 120 v a.c. Normally provided with AN enclosure, it is encapsulated to be completely shielded to eliminate radiated R.F. noise and is equipped with integral filter to suppress conducted noise. Use is guaranteed to be satisfactory from 15% to 100% through ambient temperature range of  $-55$  to  $75^{\circ}\text{C}$ .

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Beaded nylon, reinforced honey-  
combed to excellent high strength as  
greater flexibility with light weight,  
offered by U. S. Rubber Co., Wash-  
ington Center, New York 18, N. Y., a  
handing literature, list of agents,  
and other pertinent literature.

To be marketed as Freeflow Fuel Oil Dualflow: Blev, product has been tube and incorporates two threaded, rounded copper wicks for dispersion of static. Blev cover is Neoprene to withstand cold temperatures, swelling and abrasion. Sizes available are 3, 11 and 14 in.



### Small Blow-Torch

Super Jet blowtorch uses dry fuel in tablet form rather than alcohol or propane. Offered by **Jet Mfg. Co.**, Natick, Conn., lightweight unit is rated to produce temperatures well over 2000 F. and applicable for soldering, annealing or hardening small parts wherever clean, hot flame is needed. Tablets burn about 10 min. They are said to present no hazard to storage.

### Stronger Magnets

Development of two high-strength magnet materials, Alnico 10G and Alnico 7, by General Electric Co., Pittsfield, Mass., makes possible use of smaller magnets in place of larger units now used in motors, instruments, magnetic separators and other industrial products. Alnico 10G is said to have highest external and useful induction of any permanent magnet material.

Alloys 7 was developed specifically for applications where high decontamination forces are present, as in random pressures and variable wet gap (dewet). Material is stated to have higher corrosion force than the other Alloys.



## BRITISH FIRE TRUCK

Future three-seat aircraft fire-fighting tanks developed by Fyffe Co., Ltd., Swanton, Middlesex, England, described on Page 31 of Aviation Week, Oct. 3. Illustration erroneously used with the story was that of an American tank built by Carden Corp., 587 N. Michigan Ave., Chicago 1, Ill., described in this column Feb. 22.

AVIATION WEEK, October 31, 1945

**SIKORSKY**  
*Helicopter*  
**NEWS**

SIKORSKY AIRCRAFT

**STUDENTS' ATTENDANCE**



Ten years ago last month Igor Sikorsky flew for only a few seconds at an altitude of less than six inches. Yet he made aviation history. This was the initial flight of America's first successful helicopter, the VS-300. It is the beginning of a story of leadership.

Less than 2 years later, the VS-300 became the world's endurance record holder and first to execute amphibious operations. The Army Air Force was interested. To meet its specifications, the research and development staff pioneered an improved type, the H-4. It was the first successful military helicopter and became the first to go into quantity production.

Only Sikorsky helicopters went to war. A total of 400 R-4s, R-5s and R-6s were built up to V-J Day. Many of these served in various theaters of operation with the U. S. Army Air Force, Navy and Coast Guard as well as the British Royal Navy and Air Force. During this period a Sikorsky helicopter was the first to land and take off from shipboard. And people across the country began to read about hazardous rescues made possible by this versatile aircraft.

Since the war, Bikorsky has continued to make exciting history - first to carry the mail, first to explore the use for helicopters in agriculture and industry, first and only helicopter to hold all 7 major international records.

Today Sikorsky's bear the insignia of every branch of the Armed Services, and are being used for an ever increasing list of assignments heretofore considered impossible or impractical with any other type of vehicle.


This is still only the beginning. The pioneering goes on and on.

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**4-WAY SELECTOR VALVES**  
 TOTAL PERMITTED DROP:  
 13 psi at 2 gpm flow,  
 37 psi at 15 gpm flow  
**HANDLE LOAD:**  
 17 inch lbs. at 1500 psi,  
 28 inch lbs. at 3000 psi  
 1 Drop per min. internal  
 leakage max. at 3000 psi

# 20306



**4-WAY SELECTOR VALVES**  
 TOTAL PERMITTED DROP:  
 15 psi at 2 gpm  
**HANDLE LOAD:**  
 22 inch lbs. at 1500 psi,  
 35 inch lbs. at 3000 psi  
 2 Drop per min. internal  
 leakage max. at 3000 psi

# 20369



**4-WAY SELECTOR VALVES**  
 TOTAL PERMITTED DROP:  
 10 psi at 10 gpm  
**HANDLE LOAD:**  
 30 inch lbs. at 1500 psi,  
 40 inch lbs. at 3000 psi  
 1 Drop per min. internal  
 leakage max. at 3000 psi



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## PRODUCTION

### Design Compromises Cut in Orenda

Production release for new Aero Canada turbojet geared to maintain high standards specified by designers.

By Irving Stone

**Melbou, Ontario**—An ambitious and efficient development program highlighting the close relation of production to design is well underway at A. V. Roe Canada Ltd.'s Gas Turbine division.

It is a striking example of the Dominion's recent trend toward a substantially greater measure of industrial self-sufficiency. And one of the most important aspects is the opportunity afforded Canadians to produce certain components of the highest order. Aero's gas turbine division has trained extensive technical knowledge through a novel and effective approach to the complex problems in the turbojet field. It has literally learned its design and production know-how "from the ground up."

**Background**—Roots of the program go back to Canadian jet engine activities which began in 1945 at Winnipeg with the setting up of a cold test station by the National Research Council to replicate British gas turbines. In the summer of '44 the Canadian government formed Turbo Research Ltd. to carry on design and development of both aircraft and industrial gas turbine powerplants, and the Winnipeg cold test studies came under Turbo's jurisdiction.

In the spring of '46 Turbo was closed and A. V. Roe undertook a contract to design and develop gas turbine engines for the RCAF. Members of Turbo's personnel, about 50, were crisscrossed to participate in the new project. Today, about 18 times that number are employed.

The product was the Canada turbojet, initially run in March '46. Design of the Orenda was begun in '46, and initial operation was in February '48. The engine is no working version of the Canada. It is a completely new design, closely controlled production was to achieve greatest operating efficiency.

**Design and Production Philosophy**—Early in the program Aero Canada technicians guiding the design and production phases realized the necessity of ensuring the quality of parts for experimental engines.

Following this was required, they assumed, would result in a main-

tenance of competence with design dictated in the experimental stages. Then, at a later date, realization of these high standards could be made on floor of lower production costs, with full knowledge of the effect it would have on engine efficiency.

Accordingly, philosophy behind the Orenda project was to obtain maximum self-sufficiency—not placing too much dependence on outside contractors—that lessening the number of components required by the construction and removal instructions of established manufacturing techniques. Aim was to make all parts except spoolshafts fully at aerospace, bearings, etc.

**Designing Own Machines**—One example is blade fabrication. Aero designed and built numerous machines and developed new processes for casting and machining turbine and compressor blades.

An ingenious pantograph-type grinder was constructed for making turbine blades and logging dies. Aero believes that no similar machine is used industrially. Developed to ease the designer's problem, it can permit the die to be hardened before finishing, any necessary light polishing operations, and even a greater amount of accuracy than is normally attained with hand die-making methods.

Whereas later techniques are more or less common to all precision metalworking, there was considerable variation in quality of the product as a result of refinements in the pantograph. And it was with this in mind that Aero technicians developed their own knowledge. They studied how it was achieved, a technique for precision blade cutting, which, they felt, gave qualities of surface finish, physical properties and accuracy of form equal to or better than that offered by highly skilled fabricators.

**Quality Control Aimed**—And Aero had its hand in the control of parts which were subcontracted. That, for design savings such as component cutting, cutting and lacing (between turbine and compressor), it insisted in the development of manufacturing techniques to achieve the close tolerances required. For this purpose, it built the actual pattern, and set up a division of prime fabrication considerably

higher than found in commercial practice.

Looking to the future, Aero's intensive program will permit it to:

- Quickly set up its own production facility the cost of an emergency tool run it with complete assurance.
- Assist a job contractor who needs help in developing a suitable technique for a particular part, thus saving time and ensuring the quality of work in critical phases.
- Formulate an accurate cost analysis at a check on points quoted on a production basis by subcontractors.

Designing the many phases of the engine development which Aero has undertaken to do on its own, it feels that costs to date have been substantially less than any other comparable turbojet project.

Personal planning the work in the gas turbine engineering phase are Paul H. Duvall, manager and chief engineer, and Wynne B. Ross, assistant manager and chief designer. Handling the product activity are Maxwell G. Newnham, and Earl K. Brownrigg, industrial managers.

## PRODUCTION BRIEFING

**Directional Instruments Corp.**, formerly in New York City, has completed its move to Interpex, N. C. Firm has installed eight units of its geodetic electronic automatic gyrodome finder and perpendicularly pilot models are now being assembled.

**Fahnestock Aircraft, Montreal**, has won the contract for the design and construction of the fuselage and wing of the Canadair CL-44, a four-engine turboprop aircraft.

**Aviation Aircraft Corp.**, obtained agreement from "substantially all" domestic aircraft manufacturers for a new financing plan. The plan involves a preferred stock type of note issue that \$500,000 of which \$250,000 would go to deferred royalties in components for aircraft built approximately \$1 million. Remaining of the issue and a proposed \$750,000 KFC issue would be used in working capital.

**De Havilland Engineering Ltd., Hatfield, England**, has recently acquired some American Helicopters "utility wing" series of the type recently purchased by North American and Boeing for use in leaving small search wing and further parts.

**Aviation Wright Corp.** (Aviation division at Columbus has been awarded an Air Force contract to install measuring devices in F100 and F-4s for Air National Command flight engine program is expected to be extended to the 3-45 and B-59.





## New Curtiss Propeller

FOR THE NEW L-749A CONSTELLATIONS

A new Curtiss propeller has been approved by the CAA for unrestricted operation on Lockheed L-749 and L-749A Constellations. This propeller's high solidity provides improved take-off, climb and cruise speed at higher gross weights, and its rugged construction insures long service life.

Other service-proven Curtiss features incorporated in this new pro-

peller are...reliable feathering...reverse thrust for smooth air turbulence landings...automatic synchronization for passenger comfort and ease of control...desirable feathered blades for streamlining resistance.

The importance of this new propeller, after extensive stall and flight testing...under conditions simulating the severe stresses of service use...a further extension of Curtiss' leadership in the field of aircraft propellers.

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## SALES & SERVICE

### CAA May Finance Spray Plane

Bids to be asked on production of agricultural aircraft developed by Fred Weick if flight tests show promise.

By Alexander McSweeney

Tentative plans to let government development contracts to general aircraft manufacturers on a competitive basis, for a "low prototype" of the new agricultural airplane under joint development by CAA and the Department of Agriculture at Texas A & M College, was revealed last week.

CAA Administrator Del Renshaw disclosed that the first flights of the new experimental plane, designed by Fred Weick, head of the Federal Aircraft Research Center at the college, are expected probably by May 1948.

**Initial Tests**—After primary tests of the plane and the dispersing apparatus which is being developed separately for aerial spraying, dusting, weeding, etc., the additional planes will be made.

"If results of this work appear to warrant," Renshaw said, "We plan to submit manufacturers, building competitively, to building a few prototypes of this aircraft at a figure which will cover small but not making use of pertinent information, facilities available, worked up with the first aircraft. We will not release or make available information which is a matter of competitive engineering technique and which is strictly commercial information."

**Service Plans**—"I want to emphasize that the agricultural aircraft project is one of research and development. We feel that there is great potential in the exploration in agricultural aircraft of the full advantages of high lift devices, controllability at low speed, etc. A large portion of dusting, seeding and spraying is being done with military surplus airplanes and even with the oldest 30-second Huff Daland Dromedary."

"We in the Civil Aeronautics Administration, and I think I can speak for the Department of Agriculture also, are greatly interested in providing the 'littlest aircraft' as it were to help get the agricultural aircraft program started. If we can avoid unfortunate publicity at the \$700 aircraft type in reference to the early 1930 Department of Commerce specification for a \$700 aircraft type, now owned by Eugene Vidal, I believe that America and the

entire industry will both stand to gain."

**Regard Individuals**—That of least one of the three persons required to operate the plane will be the logical instructor for CAA's small pilot production order program to develop its own agricultural airplane, has been indicated to Aviation News.

Paper Aircraft Corp., a group ahead independently with development plans for a new agricultural plane. Its two-place tandem biplane, equipped as a sprayer and duster, is probably the most widely used commercially built airplane in the agricultural field.

Comment with the attitude William T. Piper, Jr., company president, has previously taken as government land expenditures for airports and other aviation projects, but is reportedly opposed to the Texas A & M project in a matter of government responsibility.

**Other Companies**—A check with all six of the two other principal light-plane companies, which government plans are now being used in specially modified form in dusting and spraying, indicates a much less strong reaction from them.

Canam Aircraft Co. has no current development plans for an agricultural plane. Spraying and dusting equipment for Canam 130 and 140 two-planes, and 170 four-planes, is available from the Truitt Company, Wichita, Kansas distributor.

Renshaw said by the company among its distributors indicated a variety did not consider that there would be a large enough market in a specialized agricultural plane to justify its development at that time. "We are just waiting and waiting at present," was the explanation of the Canam position.

Answers Aircraft Corp., Middletown, Ohio, would be interested in a government-subsidized competition to build a small quantity of agricultural planes, if all the "deliberate unavoidable inherent" is not let out too early. This company has no plans for development of its own agricultural plane but expects increased interest next year in its Aeromax Sedan, modified by a venture company as a duster and sprayer. Most American and now in the work, an Ohio-based, which Bill Gibbs, owner of Gibbs Flying Service, Inc., is chairman

trainer. Aeromax likewise has conducted a survey indicating a wide divergence of opinion between dusters and spray operators on the type of plane they want. Survey conducted by Aeromax executives that no one plane would meet a sufficiently general demand to make it worth a large market.

Piper has been disappointed about the new development but presumably it will follow along the lines which the company has said successfully for agricultural modification, probably with either 90 or 115 hp engine.

**Requirements Analyzed**—Analysis of the differences in requirements for agricultural planes indicates that for local flat country in the West, and for high altitude work, relatively high powered planes which can carry a large load are needed in greater numbers, especially in the East, the low powered lightplanes, with low wing loadings and ability to get in and out of small fields readily, are preferred.

It is understood that the Weick plane will be designed for a 185 hp engine but that it will be stressed for use of larger powerplants up to 300 hp in order to accommodate operators who want more power.

**High on Wings**—Increasing emphasis is being placed on the fact that it is for a low wing monoplane, while all of the three companies mentioned as possible principal competitors for an agricultural plane market, are currently in production only as high wing monoplane designs, and have never produced low-wing planes in quantity.

Improved visibility factor of the low-wing design is an important factor in selecting the configuration for the agricultural plane since poor visibility is blamed for a large number of the duster and spray plane crashes and crashes, reported in recent years.

### Private Pilot Forum

A new kind of forum designed to give private pilots the chance to get authoritative answers to their queries on CAA regulations, procedures, customs and navigation laws, and other matters connected with private flying is to be conducted in San Diego County, Calif.

Private pilots in that county and adjoining Imperial County have been invited to attend a Sunday Pilot's Forum, Nov. 6, in the Institute of Aeronautical Science Building. It is an experiment now, if it works, CAA has indicated that similar forums will be sponsored throughout the country.

Invitations to the Sunday Pilot's Forum were sent by the San Diego Chapter of Commuter aviation council, of which Bill Gibbs, owner of Gibbs Flying Service, Inc., is chairman.



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## BRIEFING FOR DEALERS & DISTRIBUTORS

**PROPELLER PROBLEMS**—CAA technical officials expect to act, revision soon in Civil Air Regulation Part 14, dealing with propeller certifications, because of recent problems which have developed with composite structure light-plane propellers. Present regulations have been amended for a long time, does not take into account some of the advances in testing which are now in use. Air logs in propellers were solid wood these days' any serious vibration problem but with various combinations of wood, metal and plastics in blades, shanks and hubs, things have changed. CAA technicians think that a lot of propeller difficulties that show up after certification, could be caught in certification tests if requirements were changed.

**SMOG CONTROL**—Bill to authorize CAR to study need for smog control in the vicinity of airports to promote safety in air navigation was introduced in the House of Representatives last week by Rep. Carl King (D., Calif.) but was not expected to survive the last minute surgery of Congress to adjourn. Bill would authorize the Board to investigate need for control of discharge of smoke contributing to formation of smog, but means for such control, and to report back to Congress with recommendations for legislative action to achieve the results.

**NON-SCHEDULED MEETING**—CAA's Advisory Committee on Non-Scheduled Flying was to get together with CAA regional heads and Administrator Del Ransford last week at Oklahoma City for a combined meeting and inspection of the CAA's training center there.

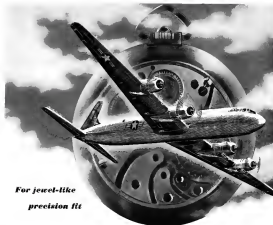
**OVERLOADED CLIPPER**—An overload may have been the cause of the crash of a chartered 145 hp. Piper Clipper in the sea six miles from Provincetown in a flight from Boston, Daniel Lacey, Westwood, Mass. of Cape Cod Flying Service, reported by radio he was "going in" just before the plane went down. With him on the flight were a woman, his two small children and another woman passenger. All were drowned.

**ACCESSORIES PANEL**—At the final Nov. 11 session of the Aviation Distribution and Manufacturers Assn. meeting at French Lick, Ind., manufacturers representatives will be asked upon to present a panel on "increasing utility of general aviation aircraft through use of accessories." Paul Lee, of R. M. Hollingshead Corp., Camden, N. J., will have on his panel representatives of companies making instruments, navigation, enhanced landing gear, radio, airport and aircraft lighting, landing gear, door, engine equipment, etc. As usual a large part of the three-day meeting beginning Nov. 9 will be taken up with conferences between the various magazine firms and their distributors. Richard Insulbacher of Schemm Corp., MDVA, president, will preside.

**AIRPORT COVERAGE**—Dr. Leslie A. Brown, director of the Civil Aeronautics Administration, thinks that the U. S. airport picture is getting encouraging, generally. He estimates there are more than 6000 airports in the U. S. and that if properly located, 7500 fields would give the nation a "possibly adequate landing area coverage." He pointed out, however, that the distribution of the present airports is still grossly not the result of careful study and planning, that the number of large airports is not adequate, and that there is a general deficiency in urban, suburban and general noncommuter facilities. He considers that the new federal construction of close-in airports such as those in Chicago, Milwaukee, Cleveland and Oklahoma City, is a healthy sign of improved service to the private pilot and looks to the crowded landing gear and provide landing gear to bring about more sea-level fields which can be located more conveniently and less expensively.

**OVER 700 CLIPPERS**—Like Miller, Piper sales manager, over 700 by Piper of the four-place 145 hp. Clipper will total well over 700 this year. The Clipper, which has been a leader in the light general aviation industry this year, has helped materially in bringing the Piper organization back into the best financial shape it has been over the last two years of 1946. This is probably the explanation for Piper's most ambitious development plans for a two-engine executive transport, and a new agricultural plane, is reported elsewhere in this issue. There are also reports that Piper has a new smaller all-metal experimental craft well along in development stages.

—ALEXANDER MEURLEY



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# AIR TRANSPORT



GENEROUS FLAP area gives Comet landing speeds comparable to piston aircraft. Lower portion of Comet nacelles flows past of flaps.

## DH Comet: British Firm's Private Gamble

Jet transport center of airline interest, while future is dim for plane government said carriers would need.

By Robert Hottel

**HATFIELD, ENGLAND**—Perhaps the most significant fact about the de Havilland Comet is that it is primarily a product of private enterprise rather than government subsidy.

Initially, the first transport to take the jet specifically designed for transport power was developed more along the traditional pattern of U. S. airplane manufacturers than that of the British government financing of prototype development. According to de Havilland officials, the Comet was developed by the de Havilland enterprise as a privately financed venture at a small fraction of the \$20 million usually used by U. S. manufacturers at the maximum cost of a transport transport prototype.

► No Subsidy—Contrary to general opinion, de Havilland officials point out, there is no British government money in the direct development of the Comet. Nor was the Comet built to meet any government specifications for transport aircraft.

The privately developed Comet, which has set the international aviation world on fire, offers an interesting contrast to the British government's aid at the time of the turbo-jet, the post-190,000 lb. eight-engine Bristol Br. 100, which has already cost every one of the 42 million British pounds in dollars. It and when the 100 passenger turbojet version of the Br. 100 was even begun to making a really true Atlantic crossing it is likely to be a

single Comet carrying twice its passenger load for the same period at considerably less cost to both passenger and operator. As a further hedge against the Comet, the Ministry of Supply has financed design studies with Vickers, Bristol and Handley Page for a long range transport type that could be built to do the Comet's job if necessary.

► Comet History—Really, the Comet history began when the original British war committee laid down a specification for a 600 mph jet transport. At that time it was in the air. De Havilland was given a Ministry of Supply contract for high speed flight research projects in the post-war period. This program resulted in the three surprising failures DH 105 jet transport planes which began the first British jet transport with transatlantic flight success as the USAF Navy NACA program with the B-101 and Douglas D-558 operated in the United States. It was during the DH 105 program that young Geoffrey de Havilland was killed when the second model, an improved, in concept, two-engine and DH 105 jet plane John Derry died the final model to March 3. As a result of this research, de Havilland decided that the British specification for the turbojet transport offered little future and sought to attract the Ministry of Supply as a transport passenger transport of lower speed and more conventional design.

The Ministry agreed to allow de Havilland to proceed with the new transport transport project at their own expense and gave approval for use of suitably short materials for the Comet prototype. It also agreed to buy two Comets for experimental use at the de Havilland could deliver its guaranteed performance. British overseas airlines agreed to buy 14 more on the same basis. These 16 Comets were contracted for at a guaranteed price based on quantity production. The price to MOG and BOAC included only a small fraction of development costs and loans even on the project de Havilland will probably have to sell at least 100 Comets.

► Withholding Clause—Both MOG and BOAC contracts carry a clause allowing both governmental agencies to withdraw from the project if de Havilland fails to meet other guaranteed performance or price. If de Havilland cannot deliver at both guaranteed the deal is off and the complete firm a whirling loss. Guaranteed performance is defined to be cruising speed of 900 mph at 10,000 ft. with a range of about 2,000 mi.

This picture is in sharp contrast to that painted by some Americans who explained the development of the Comet as another triumph of the "backyard" British aircraft industry and control that no U. S. jet transport can be developed without government funds or a guaranteed market. If anybody doubts the British manufacturers consider an order for 55 planes a guaranteed market, they should listen to the words of disclaimers coming from British manufacturers over an order at British Overseas Airways to buy 15 of a special faster liner type it wants de-



WITH LEADING EDGE SLATS fully open and flaps partly down, the Comet displays wing profile during climb. Meanwhile



PRODUCTION LINE set up at Hatfield depicts new busy housing out Comets for BOAC and BOAC prior to first flight



SPRITZ makes for takeoff assist, gives 5000 lb. thrust for 12 sec. is heated where

COGNE emerges between the two Comets





## Capital Connies

Carrier's competitive position seen aided by recent purchases.

Capital Airlines' passenger equipment program—initiated in September with the purchase of three Super DC-3s and implemented by the recent deal for three Constellation—results a new high in the carrier's comeback from the brink of bankruptcy.

In announcing the Constellation purchase (Aviation Week, Oct. 17), Presi-

dent J. B. Carmichael entrusted Capital's current position with that two years ago, when the company was scrambling for enough money to meet its payroll. It was in October, 1947, that Carmichael succeeded C. Beale Moore as head of the airline.

**Swells line life-line.**—During the first half of 1949, Capital showed an \$152,117 net profit and a \$145,125 operating profit. In the same period last year, it lost more than \$1 million.

Earnings continued at a high rate during the summer. In September alone the company estimated it showed a net of around \$120,000 as passenger traffic hit a new all-time high—60 percent

higher than the same month last year. Two years ago, Capital was about \$14 million in debt, with \$16 million in debt outstanding plus a \$4 million bank loan. It was far in arrears on interest payments.

By only this month, debtless out-standing had been cut to \$7,685,000, the bank loan was down to \$175,000, the company was current on interest payments and had \$3.5 million in cash. The bank loan will be wiped out completely next Feb. 1.

Reclusive mail pay increases announced by CAA last December plus establishment of a new rate formula for 1946, have gone far to improve Capital's position.

**Traffic Gains.**—But President Carmichael claims his company's passenger traffic growing has been so sharp that Capital's unit rate for the past few months has been close to the non-subsidized "service" level. Like other unsubsidized carriers, Capital's unit rate is passed directly to its passenger load factor and drops in traffic increases.

Capital's comeback has far surpassed expectations of company officials. At the beginning of this year, Carmichael said, "we expect to expect an increase in Capital's business in the near future." As late as last April he predicted that 1949 traffic would approximate 1946.

Despite higher traffic, Capital this year has felt barely the competition as put at other airlines operating Constellations, DC-6s and new twin-engine equipment over similar routes. By late summer, company officials decided they could not get through 1950 without new transports.

First step was purchase of three 31-passenger Super DC-3s last month. This deal required no further borrowing. By the end of 1952, Capital hopes to have 20 Super DC-3s (plus one left for its 25 Constellation) DC-3s.

**Lockheed Lenses.**—The deal with Lockheed is unique, involving an 18-month lease-purchase arrangement. Constellation units involved are Model 949s, five of which are being returned to Lockheed by KLM under an agreement whereby the Dutch airline will purchase five new Super Constellation Model 749 Constellations.

Lockheed will give the three Model 949 Constellations destined for Capital a complete overhaul and install a new main interior. The 56-passenger planes will be leased to Capital for \$17,500 a month each. These rental payments can be applied against the purchase price of \$551,000 per plane.

Carmichael concluded that Lockheed was not plugging into the equipment leasing business on a broad scale. The present agreement with Lockheed was only possible because of the KLM switch to Model 749 Constellations.

Capital's present and new Constellation would have cost up to \$1.5 million

each. Whereas the carrier will receive the former KLM Constellations and buses, July and August, purchase of new equipment would have meant a cost of \$1.5 million, for delivery.

The three steps will be used mainly on Capital's routes between Washington and Chicago. Only four-engine equipment now owned by the company is 74 DC-4s.

**Improves Financing.**—Anticipating additional plane requirements, Capital has taken steps to ease restrictions now tied to its debtless status. Under a plan filed with the Securities and Exchange Commission, the company would register \$7,400,000 in 15-year, 3½ percent convertible income debentures due in 1960 with \$7,700,000 of assets. A 4 percent debenture and the same amount of 4 percent notes, 3½ percent convertible income debentures, both due in 1960.

Carmichael told debenture holders the new issues would "provide the financial flexibility needed to continue with Capital's re-equipment program and the financial ability to pay interest and sinking fund charges on the debentures." Approval of the more would mean relaxation of restrictive provisions relating to the creation of funded debt and pledge of assets.

## Rickenbacker Not Worried By British

U. S. manufacturers of transport aircraft and government officials view the targets for better known by plane captain Capt. Eddie Rickenbacker, Eastern Air Lines president and general manager, at a recent meeting of the aviation group in New York, when he spoke on the operational outlook for jet planes in that country.

Despite the disconcerting U. S. picture in that field, Rickenbacker felt "there is no need for worrying about American buyers being put 'off'—because of the problems caused by use of the aerial system and the further weight factor of replacement parts, both as to availability and price."

**Feasible—like** he believes that in the next five to seven years U. S. manufacturers will have better and more economical jet transports than the British will have to offer.

And that probably within this time, such a degree of jet economy will be attained as to make uneconomical the need for a propeller.

**Development Lags.**—Yet, Rickenbacker feels that an industry would sense "hurry" to get it started. He believes that our manufacturers have been negligent in advancing the advantages of jet propulsion for transport aircraft.

He wishes that manufacturers "could get off the deep end" and really build a jet transport, but the price



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consideration would be "will it be the right job for me today?"

► **Speed Problems**—He said that despite meeting the design factors of speed, load, vibration, and maintenance consideration is the very realistic handle of traffic duty, which even now presents an area of concern with an "slow" transport.

► **Other Considerations**—Also, he said, it is not just the speed of the vehicle but the load will pose serious problems of loading and loading on the ramp.

During fast supply facilities at airports are another consideration. When it is to be replaced, cost under present conditions, but supply would not be sufficient to service them.

► **Initial Fraying**—Rickenbacker cautions that observed that in "these are a transport you need before two years of operation on the runway."

He said that Eastern would not get into it if the manufacturer would put initial operating costs. Under this engagement, he said, the cost would be paid for a 2-1/2 month period under conditions he thought it should be operated for the airline public.

► **Government Role**—Emphasizing the Government's obligation in the transport picture, Rickenbacker said that it would have to support development of a prototype, because an airline or group of them could afford to under take the venture.

He believes that the Government should appropriate \$75-100 million, get specifications from the airlines, select two or three of the better ones, and give them the green light. The tests that cost of a jet liner should not exceed \$1 million, but that the manufacturer would probably want closer to \$1 million for the cost.

## SHORTLINES

► **Alaska Coast Airlines**—CAA has approved a proposal whereby the Alaska Coast Airlines Corp. would become a 50 percent participant with a Pacific Coast line to a \$100,000 loan to the carrier.

► **Busell**—Dashed its DC-4 transport service between the U.S. and Peru. The carrier had been operating since 1949, but was forced to suspend operations because of a lack of funds.

► **British Commonwealth Pacific Airlines**—Lost 160,000 pounds sterling during its first complete year of operation. Over half of the loss is being absorbed by the government of Great Britain.

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► **British European Airways**—Lost 160,000 pounds sterling during its first complete year of operation. Over half of the loss is being absorbed by the government of Great Britain.

cut between London and New Orleans stations for British military personnel and their families.

► **Belmont**—Has become the first holder of the title of "Chief of Police" in the U.S.

► **Northwest**—Aired CAA proposals to cut upper berth rates on transcontinental flights to \$25 and lower berth rates to \$10.

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# LETTERS

## Edison Detectors

In last January's "Observer" column Sept. 15, 1958 column states, "Assuming fire and smoke detectors are activated by photo-cathode cells and carbon dioxide detectors." It missed the most widely used device of all—the Edison Thermopile Fire Detector.

The Edison Fire Detection System which we have manufactured and supplied to the United States, for many years, utilizes thermopile detectors exclusively and is the only fire detection system which does not "What happens makes that someone has to be understood in the fact that the Edison Fire Detector is used by nearly all major airlines conforms to all CAA air equipment, and is approved by the U.S. Air Force and U.S. Navy.

In the interest of accuracy we hope you will strengthen our message who can have been misled by your statement.

R. E. Davis, Jr.  
Associated Sales & Service, Inc.  
Edison Division  
Thames A. Edison, Inc.  
West Grove, N.J.

## H O & Rockets

In reviewing the article, "Evaluating Noncombustible Ion Rockets" in November 1958, May 18, we find that the section dealing with 90 percent hydrogen peroxide material composition of these rockets after check indicates the value of the material in the field of rocketry.

We, therefore, wish to advise you readers of this publication and clearly any microorganisms which may have come in to support North's outstanding hydrogen peroxide.

The experience of the Buffalo Electro-Chemical Co., Inc. and the many experiments since, has been that hydrogen peroxide can be handled with complete safety if certain established safety rules are followed.

The manufacturer's basic companies, for example, with that for the handling of peroxide. For at least 20 years, this, we considered "dangerous" to handle. This "danger" generally arose with the enormous growth of experience and knowledge surrounding its use and abundant use in its handling.

The J. C. C. class hydrogen peroxide in a common liquid for dipping purposes. It is considered no more caustic, caustic, or more dangerous than many common household chemicals.

Ninety percent hydrogen peroxide is not an explosive and is actually a shock absorber when under extremely high pressure. Extensive tests by the U.S. Bureau of Mines, the Navy and services have proved this.

In addition, F. B. Ballou, Jr., in "Chemical Popcorns," which appeared in the Journal of Engineering Chemistry, 18,

315, 1916, described such soundly items which they performed to the extent of the most famous.

(A) 90 percent hydrogen peroxide in aluminum containers was subjected from a range of 180 yards, to maintain gun fire, with 30 caliber semi-automatic, tank and secondary bullets. The only damage caused was the perforation of the container walls.

(B) A piston diver used a sample of 90 percent hydrogen peroxide by a 200-gallon burner through a diameter of 150 cm. caused no damage.

(C) A 200-gal. jet of an uncooled 90 percent hydrogen peroxide at the closed end of a 12-in. diameter pipe and no detonation occurred.

Hydrogen peroxide stored in all special containers from tanks and exposed to intense sunlight will not explode because of the heat effect. One standard test on all lots of 90 percent H<sub>2</sub>O<sub>2</sub> is to heat a sample at 112 degrees F. for 24 hours. No explosion occurs. The only effect is a slight decomposition of about 2 percent strength loss in the test period.

Furthermore, this material has for a number of years been stored and handled in bulk at the Buffalo Electro-Chemical Co., Inc., at ambient temperatures ranging from -10 to 112 degrees F. with no decomposition. A few more years in continued bulk without explosion.

Finally, the selection of materials of construction for handling and its long-term storage of any quantity of 90 percent hydrogen peroxide is no longer a preservation problem. We have evidenced the constant availability of a large number of all size materials for the purpose.

Limitations of your facilities indicate of other facilities. Nevertheless, we trust that this material will contribute to a fuller appreciation of the possibilities of hydrogen peroxide as an oxidizer for rocket motors and liquid fuels and that it will help begin to dispel the unwarranted fear existing at such modest hydrogen peroxide as "too hot to handle."

Walter S. Davis, Jr.  
Special Projects Dept.  
Buffalo Electro-Chemical Co., Inc.  
Buffalo, N.Y.

(The article was a summary of no address made before the S. A. E. in New York City by Dr. Fritz Zerkow, Director of research at Aircraft Engineering Corp., and G. C. Ross, Newport's chief engineer of the liquid engine department Dr. Zerkow refers.

We wish not to indicate to discourage the application of hydrogen peroxide in rocket propulsion. Admittedly, such hydrogen peroxide, as in rocket engines, is usually not stored and properly handled peroxide tanks in no instant. However, it is also difficult to maintain these conditions, especially

when a rocket is ready to launch, to use as propulsion, and is being handled by personnel who may not know all the safety requirements. Also, when a rocket is part of a larger system, and accidental spillage or leakage is possible, it may be difficult to contain the entire quantity of materials sent to an accident. We certainly have no objection to your pointing out that proper hydrogen peroxide can be handled safely in the proper equipment. (—Ed.)

## Bevo Dissents

I have noted your editorial, "Dangerous Falsifications," Sept. 17. It is, indeed, as accurate, that Bill O'Connell and his others are not in as serious as the Washington Times, and I certainly cannot say anything that could justify the law. With that in mind, if a new case comes up he had cut them off should be done.

I do not agree with you, however, that the National Air Races no longer show any merit, progress, and that they should be discontinued. In my opinion, they justify themselves from a spectator and show most people alone and should be continued on that basis of working this.

I am not prepared, or do I have all the facts before me about things that have been developed through racing competitions and show like that at Cleveland, but I am sure that they would add up considerably.

The fact that it is a big show and that airports and associated expenses have the opportunity of competing against one another for prize money recently does a lot to strengthen the industry.

The same opportunity of competition and free industry and hydrogen peroxide is the way in looking at World War II. As an issue, and if allowed to continue, can and will contribute heavily to a sound industry in this country in production and to preparation of another war or war.

Criticism we thought out here is to put the long-haired engineers and factory men to work and let us see what they can do. They can do the job, but the job definitely will not be as good as if we have the ideas and spirit of free enterprise and initiative in doing so. We should encourage and develop the spirit of free enterprise, initiative and competition.

There seems to be still a lot of argument going on and about it, and I am sure convinced that good is shown here a definite place in our industry and I think we should accept this fact and go about having good and produce better and safer than others.

Bernard H. Brown, President  
Hawthorn Plant Service  
Chattanooga, S.C.

We think Frank Bevo's attitude of NAR technical benefits is very thin. We have lost, evidenced in a way, but we think, however, that Bevo's attitude is not second of anything. We have lost, however, Bevo's attitude needs to be, for a long time. (—Ed.)



Col. Mark J. Maidel,  
Vice President in Charge of Operations,  
Scandinavian Airlines System, Inc.

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